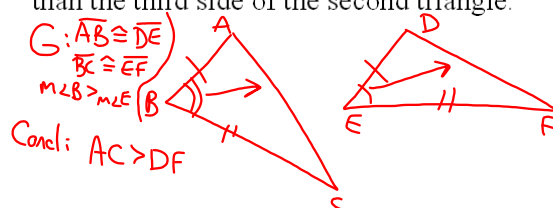


5.5 Inequalities Involving 2 Triangles

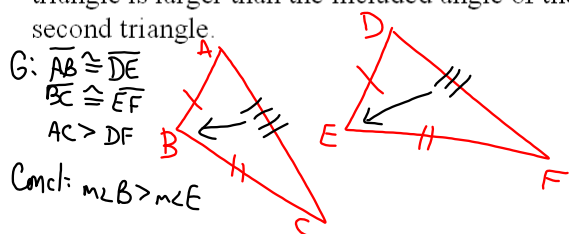
Theorem 5.13 SAS Inequality Theorem

(Hinge Theorem)—If two sides of one triangle are congruent to two sides of another triangle, but the included angle of the first triangle is greater than the included angle of the second, then the third side of the first triangle is longer than the third side of the second triangle.

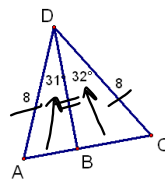


(Conv. of Hinge thm)

Theorem 5.14 SSS Inequality Theorem—If two sides of one triangle are congruent to two sides of another triangle, but the third side of the first triangle is longer than the third side of the second, then the included angle of the first triangle is larger than the included angle of the second triangle.

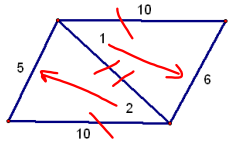


Compare the listed sides or angles.



BC $\textcircled{>}$ AB
 32 $\textcircled{>}$ 31

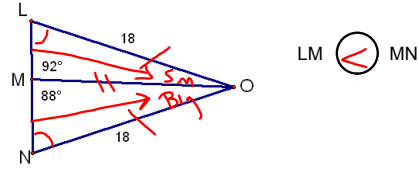
Compare the listed sides or angles.



$$m\angle 1 \quad \text{>} \quad m\angle 2$$

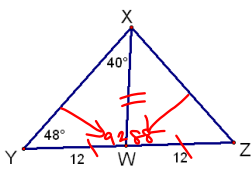
6 5

Compare the listed sides or angles.



$$LM \quad \text{<} \quad MN$$

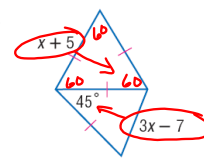
Compare the listed sides or angles.



$$XZ \quad \text{<} \quad XY$$

Write an inequality to describe the possible values of x .

5.



$$\begin{aligned} x+5 &> 3x-7 \\ 5 &> 2x-7 \\ 12 &> 2x \\ 6 &> x \\ x &< 6 \end{aligned}$$

Restrictions
each expression
 > 0

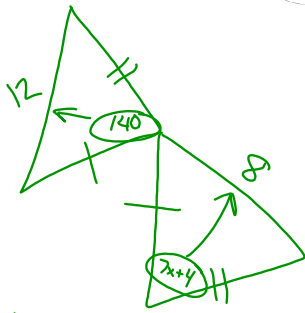
$$\begin{aligned} x+5 &> 0 \\ x &> -5 \end{aligned}$$

$$\begin{aligned} 3x-7 &> 0 \\ x &> \frac{7}{3} \end{aligned}$$

Pick $>$ the larger number

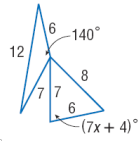
$$\frac{7}{3} < x < 6$$

Write an inequality to describe the possible values of x .



$$\begin{aligned} 7x+4 &< 140 \\ 7x &< 136 \\ x &< \frac{136}{7} \\ x &< 19\frac{3}{7} \end{aligned}$$

6.



Restr.

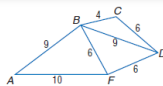
$$\begin{aligned} 7x+4 &> 0 \\ 7x &> -4 \\ x &> -\frac{4}{7} \end{aligned}$$

$$-\frac{4}{7} < x < 19\frac{3}{7}$$

HW p271
10-18, 20

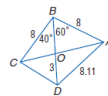
Write an inequality relating the given pair of angles or segment measures.

10. \overline{AB} , \overline{FD}
11. $m\angle BDC$, $m\angle FDB$
12. $m\angle FBA$, $m\angle DBF$

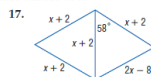
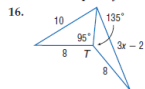


Write an inequality relating the given pair of angles or segment measures.

13. \overline{AD} , \overline{DC}
14. \overline{OC} , \overline{OA}
15. $m\angle AOD$, $m\angle AOB$

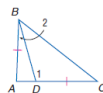


Write an inequality to describe the possible values of x .



PROOF Write a two-column

20. Given: $\triangle ABC$
 $\overline{AB} \cong \overline{CD}$
Prove: $BC > AD$



18. In the figure, $\overline{AM} \cong \overline{MB}$, $AC > BC$, $m\angle 1 = 5x + 20$ and $m\angle 2 = 8x - 100$. Write an inequality to describe the possible values of x .

